

**REMARKS**

**Summary of the Office Action**

Claims 1 and 23 stand objected to for alleged informalities. Correction is required.

Claims 1-6, 9-11, 13, 15, 17 and 23 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite.

Claims 1-3, 5, 6, 11, and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goodberlet et al. (U.S. Patent No. 7,049,747) (hereinafter “Goodberlet”) in view of Burlefinger et al. (U.S. Patent No. 6,492,657) (hereinafter “Burlefinger”).

Claims 4, 9, 10, 13, 15 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goodberlet and Burlefinger, as applied to claims 1 and 2, and further in view of Then et al. (U.S. Patent No. 5,568,013) (hereinafter “Then”).

**Summary of the Response to the Office Action**

Applicants have newly-amended independent claim 1, and dependent claims 2 and 23, to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claims. Applicants have canceled claims 4 and 10 without prejudice or disclaimer. Accordingly, claims 1-3, 5-6, 9, 11, 13, 15, 17 and 23 remain currently pending and under consideration.

**Claim Objections**

Claims 1 and 23 stand objected to for alleged informalities. Correction is required. Applicants have newly-amended claims 1 and 23 in response to the Examiner’s comments at page 2, section 3 of the Office Action. Accordingly, Applicants respectfully request that the objections to claims 1 and 23, and the associated requirement for correction, be withdrawn.

**Rejection under 35 U.S.C. § 112, Second Paragraph**

Claims 1-6, 9-11, 13, 15, 17 and 23 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Applicants have newly-amended the claims to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claims in response to the Examiner's comments at pages 2-4 sections 4-8 of the Office Action. Applicants respectfully submits that the claims as newly-amended fully comply with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. § 112, second paragraph be withdrawn.

**Rejections under 35 U.S.C. § 103(a)**

Claims 1-3, 5, 6, 11, and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goodberlet in view of Burlefinger. Claims 4, 9, 10, 13, 15 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Goodberlet and Burlefinger, as applied to claims 1 and 2, and further in view of Then. Applicants have newly-amended independent claim 1, and dependent claim 2, to differently describe embodiments of the disclosure of the instant application and/or to improve the form of the claims. Applicants have canceled claims 4 and 10 without prejudice or disclaimer. To the extent that these rejections might be deemed to still apply to the remaining claims as newly-amended, they are respectfully traversed for at least the following reasons.

Applicants respectfully submit that the claims of this application have been newly amended to describe a structure for insulating both a photocathode electrode and an anode electrode from a conductive part of the enclosure by more particularly describing the configuration of these electrodes with respect to the enclosure. More particularly, Applicants respectfully submit that the enclosure comprises a lower insulating frame, a side wall silicon

frame, and an upper insulating frame. The claimed first through hole, accommodating the photocathode electrode and extending along the direction orthogonal to the flat part of the inner wall, is provided in any one of the lower and upper frames while being apart from the side wall frame. Similarly, the claimed second through hole, accommodating the anode electrode and extending along the direction orthogonal to the flat part of the inner wall, is provided in any one of the lower and upper frames while being apart from the side wall frame. By this configuration, Applicants respectfully submit that at least one of the lower and upper frames functions to electrically separate both the photocathode and anode electrodes from the side wall frame. Further, the flat part of the inner wall is included in any one of the inner surfaces of the lower and upper frames.

Applicants respectfully submit that, in the advantageous combinations of features as described in the claims of the instant application, the side wall silicon frame is sandwiched by the lower and upper insulating frames, and the side wall silicon frame and at least the anode are comprised of the same material. This is because the side wall silicon frame and at least the anode are formed by etching a silicon layer. Applicants respectfully submit that if the photocathode electrode and/or the anode electrode are in contact with the side wall silicon frame, the voltage supply path to the photocathode and the electric signal path from the anode are affected by the electric status of the side wall silicon frame. For example, when the side wall silicon frame becomes electrically unstable, Applicants respectfully submit that the photocathode voltage on the voltage supply path varies or a signal noise results on the electric signal path.

In other words, Applicants respectfully submit that the advantageous combinations of features of the claims of the instant application, are able to overcome such a problem by the provision of a structure for insulating both the photocathode and the anode electrodes from the

side wall silicon frame. More particularly, at least one of the claimed upper and lower insulating frames have through holes, each of which extending along the direction orthogonal to the flat part on which the electron multiplier section and the anode are provided. Applicants respectfully submit that by respectively accommodating the photocathode electrode and the anode electrode into the associated through holes, the insulating structure for the photocathode electrode and the anode electrode can be advantageously achieved.

In contrast thereto, Applicants respectfully submit that the enclosure disclosed in Goodberlet or in the combination of Goodberlet and Then does not have a structure as described above. In this regard, as can be seen from Figs. 4a and 4b of Goodberlet, the cathode lead 442 and the signal-collecting lead 446, respectively corresponding to the claimed photocathode electrode and anode electrode, are provided along the flat part. Furthermore, Applicants respectfully submit that these leads 442, 446 are sandwiched by the base part of the member 460 referred to as a “lower frame” by Examiner and the surrounding part of the member 460 referred to as a “side wall frame” by the Examiner. Applicants respectfully submit that it is clear that these leads 442, 446 are in direct contact with the surrounding part. Similarly, as can be seen from Figs. 13-16 of Then, Applicants respectfully submit that it is clear that the device disclosed in Then has a structure configured so that the electrode extending from the photocathode 90 and the electrode extending from the anode 104 are in direct contact with the frame 40 referred to as a “side wall frame” by the Examiner. As described above, both Goodberlet and Then do not teach or suggest such a claimed insulating structure, and therefore Applicants believe that the claimed invention is patentable over the cited references. The additionally-applied reference to Burlefinger does not cure the deficiencies of Goodberlet and Then as described previously.

Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a) should be withdrawn because none of Goodberlet, Then, and Burlefinger, whether taken separately or combined, do not teach or suggest each feature of newly-amended independent claim 1 of the instant application. As pointed out by MPEP § 2143.03, “[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art.” In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).” Since the prior art does not disclose or suggest any of the combinations recited in Applicants’ claims, and if anything appears to teach away from the current claim recitations, KSR Int’l Co. v. Teleflex Inc., 127 S.Ct. 1727 (2007), Applicants submit that such recited combinations would not have been obvious in view of the applied references of record, whether taken alone or combined in the manner suggested by the Examiner in the Office Action.

Furthermore, Applicants respectfully assert that the dependent claims 2-3, 5-6, 9, 11, 13, 15, 17, and 23, are allowable at least because of their dependence from independent claim 1, and the reasons discussed previously.

### **CONCLUSION**

In view of the foregoing amendments and remarks, withdrawal of the rejections and allowance of all pending claims are earnestly solicited. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants’ undersigned representative to expedite prosecution. A favorable action is awaited.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. § 1.16 and 1.17 which may be required, including

any required extension of time fees, or credit any overpayment to Deposit Account No. 50-0573.

This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF**

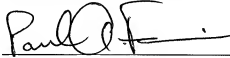
**TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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Dated: November 2, 2010

By:



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